

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

STMicroelectronics, Inc.,

Plaintiff,

vs.

MOTOROLA, INC. AND
FREESCALE SEMICONDUCTOR, INC.,

Defendants,
Counterclaim Plaintiffs,

vs.

STMicroelectronics, N.V., and
STMicroelectronics, Inc.,

Counterclaim Defendants.

CIVIL ACTION NO. 4:03-CV-276

**STMicroelectronics, Inc.'s REPLY TO
DEFENDANTS' FOURTH AMENDED COUNTERCLAIMS**

STMicroelectronics, Inc. ("ST INC") replies as follows to the Fourth Amended Counterclaims ("Counterclaims") asserted by Defendants Motorola, Inc. ("Motorola") and Freescale Semiconductor, Inc. ("Freescale") (collectively "Defendants" or "Counterclaim-Plaintiffs"):

1. On information and belief, ST INC admits the allegations in paragraph 1 of the Counterclaims.
2. On information and belief, ST INC admits that Freescale is a Delaware corporation, but it is without sufficient knowledge or information to form a belief as to the truth

of the remaining allegations contained in Paragraph 2 of the Counterclaims and, therefore, denies those allegations.

3. Responding to the allegations in paragraph 3 of the Counterclaims, ST INC admits that it is a Delaware corporation having its principal place of business at 1310 Electronics Drive, Carrollton, Texas 75006. ST INC admits that it sells semiconductor products throughout the United States and in this District. The remaining allegations in paragraph 3 state a proposition of law to which no response is required.

4. Responding to the allegations in paragraph 4 of the Counterclaims, ST INC admits that it is an indirect subsidiary of STMicroelectronics, N.V. ("ST NV"). The remaining allegations in paragraph 4 are directed solely to ST NV, and thus, ST INC is not required to respond to such allegations, but ST INC specifically denies that ST INC and ST NV should be referred to collectively as Defendants attempt to do in the Counterclaims.

5. Paragraph 5 of the Counterclaims states only propositions of law, and thus, ST INC is not required to respond to that paragraph but ST INC acknowledges that this Court has subject-matter jurisdiction over the Counterclaims.

6. Paragraph 6 of the Counterclaims states only propositions of law, and thus, ST INC is not required to respond to that paragraph but ST INC acknowledges that venue is proper in this District.

7. ST INC admits the allegations in paragraph 7 of the Counterclaims.

8. ST INC admits the allegations in paragraph 8 of the Counterclaims.

9. ST INC admits the allegations in paragraph 9 of the Counterclaims.

10. ST INC denies the allegations in paragraph 10 of the Counterclaims.

11. ST INC denies the allegations in paragraph 11 of the Counterclaims.

12. ST INC admits the allegations in paragraph 12 of the Counterclaims.

13. ST INC admits the allegations in paragraph 13 of the Counterclaims.

14. ST INC admits the allegations in paragraph 14 of the Counterclaims.

15. ST INC denies the allegations in paragraph 15 of the Counterclaims.

16. ST INC denies the allegations in paragraph 16 of the Counterclaims.

17. ST INC admits the allegations in paragraph 17 of the Counterclaims.

18. ST INC admits the allegations in paragraph 18 of the Counterclaims.

19. ST INC admits the allegations in paragraph 19 of the Counterclaims.

20. ST INC denies the allegations in paragraph 20 of the Counterclaims.

21. ST INC denies the allegations in paragraph 21 of the Counterclaims.

22. ST INC admits the allegations in paragraph 22 of the Counterclaims.

23. ST INC denies the allegations in paragraph 23 of the Counterclaims.

24. ST INC denies the allegations in paragraph 24 of the Counterclaims.

25. ST INC denies the allegations in paragraph 25 of the Counterclaims.

26. ST INC denies the allegations in paragraph 26 of the Counterclaims.

27. Responding to the allegations in paragraph 27 of the Counterclaims, ST INC admits that United States Patent No. 5,155,563 ("the '563 patent") was issued by the United States Patent Office on October 13, 1992 and that the face of that patent lists as inventors Robert B. Davies, Robert J. Johnson, and Francine Y. Robb. ST INC denies the remaining allegations in paragraph 27.

28. Responding to the allegations in paragraph 28 of the Counterclaims, ST INC admits that United States Patent No. 4,548,654 ("the '654 patent") was issued by the United States Patent Office on October 22, 1985 and that the face of that patent lists as inventor Philip J. Tobin. ST INC denies the remaining allegations in paragraph 28.

29. Responding to the allegations in paragraph 29 of the Counterclaims, ST INC admits that United States Patent No. 5,776,798 ("the '798 patent") was issued by the United States Patent Office on July 7, 1998 and that the face of that patent lists as inventors Son Ky Quan, Samuel L. Coffman, Bruce Reid, Keith E. Nelson, and Deborah A. Hagen. ST INC denies the remaining allegations in paragraph 29.

30. Responding to the allegations in paragraph 30 of the Counterclaims, ST INC admits that United States Patent No. 5,084,814 ("the '814 patent") was issued by the United States Patent Office on January 28, 1992 and that the face of that patent lists as inventors John J. Vaglica, Jay A. Hartvigsen, and Rand L. Gray. ST INC denies the remaining allegations in paragraph 30.

31. ST INC is without sufficient knowledge to form a belief as to the truth of the allegations in paragraph 31 of the Counterclaims, and therefore, denies the allegations in that paragraph. Further, upon information and belief, Motorola has no right, title, or interest in the '563, '654, '814, or '798 patents and has no standing as a Counterclaim-Plaintiff in this action.

32. Responding to the allegations in paragraph 32 of the Counterclaims, ST INC admits that the patents listed in paragraphs 27-30 of the Counterclaims relate to semiconductor technologies, but denies the remaining allegations in paragraph 32.

33. ST INC denies the allegations in paragraph 33 of the Counterclaims.

34. ST INC denies the allegations in paragraph 34 of the Counterclaims.

35. ST INC repeats each of its responses in paragraphs 27 through 34 above as if set forth fully herein.

36. ST INC denies the allegations in paragraph 36 of the Counterclaims.

37. ST INC denies the allegations in paragraph 37 of the Counterclaims.

38. ST INC denies the allegations in paragraph 38 of the Counterclaims.

39. ST INC repeats each of its responses in paragraphs 27 through 34 above as if set forth fully herein.

40. ST INC denies the allegations in paragraph 40 of the Counterclaims.

41. ST INC denies the allegations in paragraph 41 of the Counterclaims.

42. ST INC repeats each of its responses in paragraphs 27 through 34 above as if set forth fully herein.

43. ST INC denies the allegations in paragraph 43 of the Counterclaims.

44. ST INC denies the allegations in paragraph 44 of the Counterclaims.

45. ST INC denies the allegations in paragraph 45 of the Counterclaims.

46. ST INC repeats each of its responses in paragraphs 27 through 34 above as if set forth fully herein.

47. ST INC denies the allegations in paragraph 47 of the Counterclaims.

48. ST INC denies the allegations in paragraph 48 of the Counterclaims.

49. ST INC denies the allegations in paragraph 49 of the Counterclaims.

DEFENDANTS' PRAYER FOR RELIEF

ST INC denies that Defendants are entitled to any of the relief requested in the prayer for relief in the Counterclaims.

AFFIRMATIVE DEFENSES

FIRST DEFENSE

50. ST INC has not infringed any valid and/or enforceable claim of United States Patent Nos. 5,155,563 (the "563 patent"), 4,548,654 (the "654 patent"), 5,776,798 (the "798 patent"), or 5,084,814 (the "814 patent"). Nor has ST INC actively induced infringement of or contributorily infringed any claims of these patents.

SECOND DEFENSE

51. The '563 patent, '654 patent, '798 patent, and/or '814 patent are partially or wholly invalid and/or unenforceable for failure to meet the requirements of 35 U.S.C. §§ 1 *et seq.*, including, but not limited to 35 U.S.C. §§ 101, 102, 103, and 112.

THIRD DEFENSE

52. The Counterclaims are barred by laches and/or equitable estoppel.

FOURTH DEFENSE

53. The Counterclaims are barred by license and/or contract.

FIFTH DEFENSE

54. Motorola's remedies for infringement of the '798 patent and the '654 patent, if any, are limited by 35 U.S.C. § 287(b).

SIXTH DEFENSE

55. Motorola's remedies for infringement of the '563 patent and the '814 patent, if any, are limited by 35 U.S.C. § 287(a).

SEVENTH DEFENSE

56. On information and belief, the '798 patent is unenforceable as a result of inequitable conduct in its procurement, including but not limited to the following acts:

- A. The named inventors, their attorneys or assigns, and/or other individuals associated with the filing and/or prosecution of the '798 patent intentionally withheld from the Patent Office material information and intentionally made materially misleading statements to the Patent Office.
- B. For example, the named inventors, their attorneys and/or their assigns intentionally withheld from the Patent Office known material prior art and/or materially misrepresented to the Patent Office the state of the prior art with respect to:
 - 1. A technical paper created by the Dexter Corporation in September of 1994 teaching that an advantage to using certain of their encapsulants was "a flat surface for pick and place automated processing."
 - 2. Materials received from the Dexter Corporation in 1994 that describe Hysol® FP4450 and Hysol® FP4650 as "self-leveling" encapsulants.
 - 3. A technical paper created by the Dexter Corporation in February of 1994 teaching a technique where "a low flow encapsulant" is used to create a potting ring that forms "a window around a chip" and "the center area over chip and wires is filled in with the high flow version" of the encapsulant.

C. As another example, the named inventors, their attorneys and/or their assigns intentionally withheld from the Patent Office known material prior art and/or materially misrepresented to the Patent Office the state of the prior art with respect to:

1. A technical standard published by the Joint Electron Device Engineering Council ("JEDEC") and relating to packaging standards with respect to the dimensions and tolerances of packaged IC devices.
2. A technical standard related to dimensions and tolerances published by the American National Standards Institute ("ANSI") and entitled the ANSI Y14.5.

D. As a further example, the named inventors, their attorneys and/or their assigns intentionally withheld from the Patent Office known patents that were material prior art. Specifically, these parties failed to disclose U.S. Patent Nos. 3,606,673 ("the '673 patent"); 3,413,713 ("the '713 patent"); and 3,444,441 ("the '441 patent").

1. Each of these patents describe the encapsulation of a plurality of semiconductor chips mounted to a lead-frame substrate using a continuous encapsulant and thereafter singulating the array into individual package sites.
2. Motorola was aware of all three of these patents long before the Quan application was filed. Indeed, the '673 patent was cited during the prosecution of at least six patents assigned to Motorola, and both the '713 and '441 patents are assigned to Motorola.

- E. This information was known to the inventors and, on information and belief, was known to the attorneys who were prosecuting the applications and officers of Motorola. It was intentionally withheld from the Patent Office.

EIGHTH DEFENSE

57. On information and belief, the "'814 patent" is unenforceable as a result of patent misuse, the owner of the '814 patent is estopped from asserting it against ST INC, and ST INC has an implied license to the '814 patent based on actions taken by Motorola, including but not limited to the following:

- A. Motorola is a member of the Nexus 5001 Forum and participated in the creation and promulgation of the Institute of Electrical and Electronics Engineers' ("IEEE's") "Standard for a Global Embedded Processor Debug Interface" ("Standard"). The Forum Bylaws provide for a forty-five day review period during which "the nominated representatives of the Members shall disclose patent applications that are personally known to those representatives that relate to the proposed Standard or Amendment." Although the patent is related to the Standard, Motorola failed to disclose the existence of the '814 patent.

1. The Forum steering committee formally notified Members of their obligations in a memo: "Notifications of patent applications or claims that relate to the draft specification should be submitted in confidence to the Nexus 5001 Forum steering committee . . ."

2. Both Ron Stence, Motorola's Forum representative, and the Forum steering committee interpreted the duty to disclose as including the duty to

disclose both existing patents and currently pending applications. (Email from Ron Stence, Nexus 5001 Forum Representative for Motorola, to Greg Kohn, Nexus 5001 Forum Program Manager (Feb. 10, 2003, 11:47:52 EST)).

3. Motorola failed to disclose to the organization the existence of the '814 patent and has now alleged infringement based on an ST device that complies with the Nexus 5001 Forum Standard.

- B. As previously stated, Motorola actively participated in the creation and promulgation of the IEEE's Standard, did not disclose the '814 patent to the Forum, and has now chosen to assert this patent against devices that comply with the Standard.
- C. By failing to disclose the patent to the Forum, and upon information and belief, by such other acts known to Motorola in its dealings with the Nexus Forum and its members, Motorola has acted in bad faith and impermissibly broadened the scope of the '814 patent grant with an anti-competitive effect.

NINTH DEFENSE

58. On information and belief, the '563 patent is unenforceable as a result of inequitable conduct in its procurement, including but not limited to the following acts:

- A. Motorola's prosecuting attorney, in connection with the filing and/or prosecution of the '563 patent, intentionally withheld from the Patent Office material information and intentionally made materially misleading statements to the Patent Office.
- B. For example, Motorola's attorney intentionally withheld from the Patent Office known material prior art and/or materially misrepresented to the Patent Office

the state of the prior art with respect to the Itoh et. al article cited during the prosecution of the '563 patent.

1. The article is identified on the face of the '563 patent as Itoh et al., "Extremely High Efficient UHF Power MOSFET for Handy Transmitter," IEDM, 1983, pp. 95-97.
2. A named inventor of the '563 patent attended a conference in 1983 during which the Itoh et al. article was presented. The Itoh et al. article was belatedly cited to the U.S. Patent and Trademark Office ("PTO").
3. A Motorola employee obtained an RF power semiconductor device made by Hitachi ("the Hitachi device") that was partially described in the Itoh et al. article. The Hitachi device was reverse engineered, and the inventors of the '563 patent were aware of the results of this process. The named inventors then set upon making an improvement to this Hitachi device, which is described in the '563 patent.
4. The Hitachi device is prior art as to the '563 patent at least under 35 U.S.C. §102 (a).
5. Both the Hitachi device and the inventors' device included a semiconductor chip or die having multiple source and drain regions formed in an epitaxial layer, which in turn had been formed on an underlying substrate. The improvement included, most significantly, providing multiple deep P+ regions (commonly known as "sinters") that extended from the top surface of the epitaxial layer down to the underlying substrate to electrically connect the associated top-side source regions to the substrate and through the substrate to

the back side of the die. In contrast, the Hitachi device had a single P+ sinker extending from the top surface down to the substrate.

6. During the prosecution of the '563 patent, the prosecuting attorney filed a "Supplemental Amendment" on February 11, 1992 and argued the patentability of the claims, including Claim 4, over the Itoh et al. article.

7. The Itoh et al. article discloses device features that were present in the prior-art Hitachi device. The article, however, does not disclose the particular feature of a P+ sinker extending from the top surface of the epitaxial layer down to the substrate, which the prosecuting attorney knew was present in the prior-art Hitachi device.

8. Claim 4 of the '563 patent, in pertinent part, calls for "a first region of the first conductivity type formed in the epitaxial layer, extending from the top surface down to the substrate, wherein the first region is more heavily doped than the epitaxial layer." This single "first region" corresponds to the single P+ sinker in the prior-art Hitachi device. All other elements of Claim 4 are also found in the prior-art Hitachi device.

9. In the remarks in the Supplemental Amendment, the prosecuting attorney argued the patentability of the claims over the Itoh et al article and stated: "Claims 1 and 4 now call for the first region to extend down to the substrate. This is not believed to be shown or suggested by the enclosed reference." The prior-art Hitachi device was not cumulative of the Itoh et al. article because it specifically included such a first region (the P+ sinker) extending down to the

substrate that the prosecuting attorney argued was not shown or suggested by the article.

- C. The prosecuting attorneys knew of the Hitachi device, knew that it was prior art as to the '563 patent application and the inventions claimed therein, knew that it was material to the patentability of at least Claim 4, and intentionally failed to identify the Hitachi device as prior art to the U.S. PTO. Therefore, at least Claim 4 of the '563 patent is unpatentable as anticipated by the prior-art Hitachi device. As anticipatory prior art to at least Claim 4, the undisclosed Hitachi device was highly material to patentability, from which deceptive intent on the part of the prosecuting attorney can be inferred.
- D. Moreover, in the "Background of the Invention" section of the '563 specification, the prosecuting attorney intentionally described, in part, the Hitachi device in a manner deceptively calculated to lead the PTO to believe that it was the earlier work of the inventors rather than prior art. Indeed, that section does not identify the Hitachi device by name or state that it was prior art.
- E. During prosecution of the application that resulted in the '563 patent, Motorola's prosecuting attorney made no attempt to characterize the prior-art nature of the Hitachi device. Rather, the prosecuting attorney argued that the partial description of the Hitachi device that is contained in the Itoh article lacked the very feature (a deep P+ sinker) that she asserted made the claims (including Claim 4) patentable over the Itoh article. Yet she knew that the

prior-art Hitachi device had such a feature but deceptively chose not to disclose that fact to the PTO.

TENTH DEFENSE

59. On information and belief, ST INC has an implied license to the '563 patent based on continuing transactions between Motorola and ST INC, including but not limited to the following:

- A. Insofar as Motorola and Freescale allege that the LDMOS products infringe claims of the '563 patent, ST INC has an implied license to the '563 patent.
 - 1. Motorola and Freescale have accused LDMOS products of infringing the '563 patent.
 - 2. Motorola has purchased a substantial percentage of the LDMOS accused products, and, upon information and belief, Freescale will continue to purchase these products.
 - 3. The LDMOS products are made by ST INC based on specifications supplied by Motorola.
 - 4. Motorola's conduct has given rise to an implied license to the '563 patent to ST INC.
- B. By its actions, Motorola and Freescale have waived any damages or right to seek an injunctive relief from ST INC making, using, or selling LDMOS products.

PRAYER

FOR THESE REASONS, STMicroelectronics, Inc. respectfully requests that this Court enter judgment its favor and grant the following relief:

- a. Enter an order denying Motorola, Inc.'s and Freescale Semiconductor, Inc.'s counterclaims;
- b. Enter an order decreeing that the '563, '654, '798, and '814 are partially or wholly invalid and/or unenforceable;
- c. Enter an order rendering the '798 patent unenforceable as a result of inequitable conduct;
- d. Enter an order rendering the '814 patent unenforceable as a result of patent misuse, estoppel, and/or implied license;
- e. Enter an order rendering the '563 patent unenforceable as a result of inequitable conduct, and/or implied license;
- f. Enter an order awarding ST INC its costs;
- g. Enter an order finding that this is an exceptional case and award ST INC its reasonable attorneys' fees under 35 U.S.C. § 285; and
- h. Award such other relief as the Court may deem appropriate and just under the circumstances.

Dated: October 1, 2004

Respectfully submitted,

/s/ Bruce S. Sostek

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CERTIFICATE OF SERVICE

The undersigned certifies that on October 1, 2004, a true and correct copy of the foregoing document was served on all counsel of record who are deemed to have consented to electronic service via the Court's CM/ECF system per Local Rule CV-5(a)(3).

/s/ Jane P. Brandt

Jane Politz Brandt